

10950

Apacherian-Chihuahuan Mesquite Upland Scrub

BpS Model/Description Version: Aug. 2020

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Vegetation Type

Shrubland

Map Zones

26, 35

Model Splits or Lumps

This Biophysical Setting (BpS) is lumped with: 2613910.

Geographic Range

Chihuahuan Desert extending into the Sky Island region to the west and the Edwards Plateau to the east.

Biophysical Site Description

Substrates are typically derived from alluvium, often gravelly without a well-developed argillic or calcic soil horizon that would limit infiltration and storage of winter precipitation in deeper soil layers. Mesquite (*Prosopis* spp.) and other deep-rooted shrubs exploit this deep soil moisture, which is unavailable to grasses and cacti.

Vegetation Description

Vegetation is typically dominated by honey mesquite (*Prosopis glandulosa*) or velvet mesquite (*Prosopis velutina*) and succulents. Other desert scrub that may co-dominate or dominate includes viscid acacia (*Acacia neovernicosa*), whitethorn acacia (*A. constricta*), creosotebush (*Larrea tridentata*), oneseed juniper (*Juniperus monosperma*), or redberry juniper (*J. coahuilensis*). Grass species may include sideoats grama (*Bouteloua curtipendula*), purple threeawn (*Aristida purpurea*), bush muhly (*Muhlenbergia porteri*), cane bluestem (*Bothriochloa barbinodis*), streambed bristlegrass (*Setaria leucopila*), and *Vulpia* spp. The deeper soils within this BpS help support good grass cover beneath the shrub canopy. Higher annual rainfall and deeper soils in this BpS, as compared to a Sonoran desert location, allow for a more diverse plant community.

BpS Dominant and Indicator Species

Symbol	Scientific Name	Common Name
BOUTE	<i>Bouteloua</i>	Grama
ISMU3	<i>Isopterygiopsis muelleriana</i>	Mueller's isopterygiopsis moss
ARIST	<i>Aristida</i>	Threeawn
MUPO2	<i>Muhlenbergia porteri</i>	Bush muhly

ISTE	<i>Isoetes tegetiformans</i>	Merlin's grass
PRJU3	<i>Prosopis juliflora</i>	Prosopis juliflora
ACACI	<i>Acacia</i>	Acacia
LATR2	<i>Larrea tridentata</i>	Creosote bush

Species names are from the NRCS PLANTS database. Check species codes at <http://plants.usda.gov>.

Disturbance Description

Drought is a relatively common occurrence in this BpS, generally occurring every 10-15yrs and lasting 2-3yrs. Occasional long-term drought periods (10-15yr duration) will affect this BpS. Historical natural ignition fires within this BpS were probably 10-15ac in size. Fire helped maintain a general mosaic pattern between open grassland and shrub-dominated areas.

Fire Frequency Results

Severity	Min FI	Max FI
Replacement		
Moderate (Mixed)		
Low (Surface)		
All Fires		

Scale Description

Patch size of this BpS ranges from 50-1,000,000ha (from literature).

Adjacency or Identification Concerns

Similar to Chihuahuan Mixed Desert and Thornscrub (CES302.734) but is generally found at higher elevations where *L. tridentata* and other desert scrub are not co-dominant. It is also similar to Chihuahuan Stabilized Coppice Dune and Sand Flat Scrub (CES302.737) but does not occur on eolian-deposited substrates.

Issues or Problems

This is probably not a BpS but may be a class within semi-desert grassland (BpS 1121). During the last century, the area occupied by this system has increased through conversion of desert grasslands as a result of drought, overgrazing by livestock, and/or decreases in fire frequency. It is believed that this is a system that occurred in very minor amounts and has become widespread as a result of drought, heavy grazing, and other actions.

A climate change that may occur is an increase of intense storms. These storms may increase erosion issues as a major disturbance. Also invasive plant grass species may occur, which can increase fire intensity and frequency.

Native Uncharacteristic Conditions

Comments

For map zone (MZ) 26, the model for BpS 1095/1391 was initiated from the MZ25 BpS 1095 model. Significant changes to the model for MZ26 resulted in a change in the model. BpS 1095 for MZ25 is based on 151095, Mike Babler, Oct 2005. Model 151095 was based on information provided by Heather Schussman, hschussman@tnc.org. The VDDT model is the same as 151121.

Succession Classes

Mapping Rules

Upper Layer Lifeform	Height (m)	Canopy Cover (%)									
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100
Herb	0-0.5	A	A	A	A	A	A	A	A	A	A
Herb	0.5-1.0	A	A	A	A	A	A	A	A	A	A
Herb	>1.0	A	A	A	A	A	A	A	A	A	A
Shrub	0-0.5	B	B	C	C	C	C	C	UN	UN	UN
Shrub	0.5-1.0	B	B	C	C	D	D	D	UN	UN	UN
Shrub	1.0-3.0	B	B	C	C	D	D	D	UN	UN	UN
Shrub	>3.0	B	B	C	C	D	D	D	UN	UN	UN
Tree	0-5	B	B	C	C	D	D	D	UN	UN	UN
Tree	5-10	UN	UN	UN	UN	UN	UN	UN	UN	UN	UN
Tree	10-25	UN	UN	UN	UN	UN	UN	UN	UN	UN	UN
Tree	25-50	UN	UN	UN	UN	UN	UN	UN	UN	UN	UN
Tree	>50	UN	UN	UN	UN	UN	UN	UN	UN	UN	UN

Succession class letters A-E are described in the Succession Class Description section. Some classes use a leafform distinction where a qualifier is added to the class letter: Brdl (broadleaf), Con (conifer), or Mix (mixed conifer and broadleaf). UN refers to uncharacteristic native or a combination of height and cover that would not be expected under the reference condition. NP refers to not possible or a combination of height and cover which is not physiologically possible for the species in the BpS.

Description

Class A 12 Early Development 1 - All Structures

Indicator Species

Symbol	Scientific Name	Common Name	Canopy Position
BOCU	Bouteloua curtipendula	Sideoats grama	Upper
MUPO2	Muhlenbergia porteri	Bush muhly	Upper
ARIST	Aristida	Threeawn	Upper
IPER	Ipomoea eriocarpa	Morningglory	Lower

Description

Grasses and forbs. Early-succession post-fire grass and forb community dominated by perennial bunchgrasses, annual grasses, and forbs. Upper layer of shrub canopy cover typically <5%. Short period of duration in this stage effectively precludes disturbance.

Maximum Tree Size Class

None

Class B 66 Mid Development 1 - Open

Indicator Species

Symbol	Scientific Name	Common Name	Canopy Position
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Maximum Tree Size Class

None

Model Parameters

Deterministic Transitions

From Class	Begins at (yr)	Succeeds to	After (years)
Early1:ALL	0	Mid1:OPN	2
Mid1:OPN	3	Mid2:OPN	15
Mid2:OPN	16	Late1:OPN	30
Late1:OPN	31	Late1:OPN	999

Probabilistic Transitions

Disturbance Type	Disturbance occurs In	Moves vegetation to	Disturbance Probability	Return Interval (yrs)	Reset Age to New Class Start Age After Disturbance?	Years Since Last Disturbance
Replacement Fire	Mid1:OPN	Early1:ALL	0.03	33	Yes	0
Wind or Weather or Stress	Mid1:OPN	Early1:ALL	0.033	30	Yes	0
Surface Fire	Mid1:OPN	Mid1:OPN	0.04	25	No	0
Wind or Weather or Stress	Mid2:OPN	Mid1:OPN	0.015	67	Yes	0
Surface Fire	Mid2:OPN	Mid1:OPN	0.06	17	Yes	0
Replacement Fire	Mid2:OPN	Early1:ALL	0.12	8	Yes	0
Wind or Weather or Stress	Late1:OPN	Early1:ALL	0.01	100	Yes	0
Replacement Fire	Late1:OPN	Early1:ALL	0.01	100	Yes	0

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